

CLAIMS

1. A photocatalyst material supported by a photocatalyst material supporting body for constituting a photocatalyst body, characterized in that the particles of either one of a metal or a metallic compound are supported by said photocatalyst material.
2. A photocatalyst material supported by a photocatalyst material supporting body for constituting a photocatalyst body, characterized in that the particles of either one of a base metal or a base-metal compound are supported by said photocatalyst material.
3. A photocatalyst material supported by a photocatalyst material supporting body for constituting a photocatalyst body, characterized in that the particles of both a base metal and a base-metal compound are supported by said photocatalyst material.
4. The photocatalyst material according to claim 2 or 3, characterized in that said photocatalyst is titanium oxide, and said base metal or base-metal compound is at least one of Cu, Fe, Ni, Zn, Co, V, Zr, Mn, Sn, Cr, W, Mo, Nb, Ta, or the compounds thereof.
5. The photocatalyst material according to any one of claims 2 to 4, characterized in that said photocatalyst material is a photocatalyst material consisting of a base portion to be fixed on the surface of the photocatalyst material supporting body or a base portion fixed on the surface of the photocatalyst material supporting body, and a columnar photocatalyst crystalline body extending from said base portion.
6. The photocatalyst material according to claim 5, characterized in that said base portion consists of crystal nuclei or the like, and the inside of said columnar photocatalyst crystalline body has a hollow columnar structure.

7. The photocatalyst material according to claim 6, characterized in that a structure consisting of fine photocatalyst particles in said photocatalyst crystalline body.

8. The photocatalyst material according to any one of claims 2 to 7, characterized in that when acetaldehyde gas is decomposed using said photocatalyst material consisting of a supporting quantity of about 0.1 g supported on the photocatalyst material supporting body having a catalyst
5 supporting area of 75 mm × 75 mm, the time required for reducing the acetaldehyde gas concentration in a glass container of a volume of 20 liter is 5 minutes or more and 10 minutes or less.

9. A photocatalyst body comprising a photocatalyst material supporting body, and the photocatalyst material supported on the photocatalyst material supporting body according to any of claims 2 to 8.

10. A method for producing a photocatalyst material comprising a raw photocatalyst material preparing step for obtaining a photocatalyst material that supports no base metals or no compounds thereof (hereafter referred to as "raw photocatalyst material"), and a base-metal supporting step for supporting the fine
5 particles of a base metal or the compound thereof on the surface of the obtained raw photocatalyst material; characterized in that said base-metal supporting step comprises a solution treatment step for implementing treatment, such as immersing and applying, using a solution of a base-metal compound to the raw photocatalyst material; and a ultraviolet treatment step for reducing and
10 depositing the base metal or the compound thereof on the surface of the raw photocatalyst material by radiating ultraviolet rays on the photocatalyst material treated in said solution treatment step.

11. A method for producing a photocatalyst material comprising a raw photocatalyst material preparing step for obtaining a photocatalyst material that supports no base metals or no compounds thereof, and a base-metal supporting step for supporting the fine particles of a base metal or the compound thereof on
5 the surface of the obtained raw photocatalyst material; characterized in that said

base-metal supporting step comprises a solution treatment step for implementing treatment, such as immersing and applying, using a solution of a base-metal compound to the raw photocatalyst material; a drying step for drying the photocatalyst material treated in said solution treatment step; and a heat treatment step for heat-treating the photocatalyst material treated in said drying step.

12. The method for producing a photocatalyst material according to claim 11, characterized in further comprising, after said heat treatment step, a reduction step for reducing fine base metal particles in an oxidized state supported on the surface of said photocatalyst material.

13. A method for producing a photocatalyst material comprising a raw photocatalyst material preparing step for obtaining a photocatalyst material that supports no base metals of no compounds thereof, and a base-metal supporting step for supporting the fine particles of a base metal or the compound thereof on the surface of the obtained raw photocatalyst material; characterized in that said base-metal supporting step is a chemical vapor deposition step for supporting the fine particles of a base metal or a compound thereof on the surface of the raw photocatalyst material by a thermal CVD method, a plasma CVD method, or other chemical vapor deposition methods.

14. A method for producing a photocatalyst material comprising a raw photocatalyst material preparing step for obtaining a photocatalyst material that supports no base metals of no compounds thereof, and a base-metal supporting step for supporting the fine particles of a base metal or the compound thereof on the surface of the obtained raw photocatalyst material; characterized in that said base-metal supporting step is a spray pyrolysis step for pyrolyzing a solution of a base metal compound by spraying it on the surface of a heated raw photocatalyst material, and thereby the base metal or the compound thereof is supported on the surface of the raw photocatalyst material.

15. A method for producing a photocatalyst material comprising a raw photocatalyst material preparing step for obtaining a photocatalyst material that supports no base metals or no compounds thereof, and a base-metal supporting step for supporting the fine particles of a base metal or the compound thereof on the surface of the obtained raw photocatalyst material; characterized in that said base-metal supporting step comprises a solution treatment step for implementing treatment, such as immersing and applying, using a solution of a base-metal compound to the raw photocatalyst material; and a reducing agent adding step for depositing a base metal or the compound thereof on the surface of the raw photocatalyst material by adding a reducing agent to the photocatalyst material treated in said solution treatment step.

16. A method for producing a photocatalyst material comprising a raw photocatalyst material preparing step for obtaining a photocatalyst material that supports no base metals or no compounds thereof, and a base-metal supporting step for supporting the fine particles of a base metal or the compound thereof on the surface of the obtained raw photocatalyst material; characterized in that said base-metal supporting step is a physical vapor deposition step for supporting the fine particles of a base metal or a compound thereof on the surface of the raw photocatalyst material by a sputtering method, a vacuum vapor deposition method, or other vapor deposition methods.